Final Report

JFSP 9-S-04-10 Fire Science Network and Delivery System for Fire

Activity Period: 6/4/2013 to 9/30/2017

PI: Charles Goebel

Introduction

In 2009, the Lake States Fire Science Consortium (LSFSC) was established as one of the original members of the Joint Fire Science Program (JFSP) Knowledge Exchange Network. Over the activity period of this project the LSFSC has represented all or part of seven states (Minnesota, Wisconsin, Michigan, Indiana, Ohio, Pennsylvania, and New York) and two Canadian provinces (Ontario, Manitoba), encompassing an area associated with the Great Lakes region of the United States and Canada.

As with the other JFSP Fire Science Exchanges, the LSFSC's mission is to *accelerate the awareness, understanding, and adoption of wildland fire science information by federal, tribal, state, local, and private stakeholders of the region*. We have utilized a diversity of methods to help ensure that the best available information on fire science is accessible to a variety of audiences. We also have stressed activities that link managers, scientists, and policymakers by providing information and tools to support management of fire-adapted ecosystems of the Lake States region. In all of our efforts, we strive to maintain the set of core values identified by the JFSP Governing Board when establishing the regional Knowledge Exchange Network -- being inclusive, neutral science partners committed to ensuring that our activities are end-user driven through the use of innovative methods that enhance and facilitate the flow of fire science information and dialogue among resource managers, scientists, and policymakers.

Our general approach focused on ideas consistent with the "Diffusion of Innovations" concept (Rogers 1962) and the "Commitment Model" as proposed and described in Conner (2006). As our primary aim is to increase the availability and adoption of the best available fire science, we consider this as an on-going process occurring in three general phases: preparation, acceptance, and commitment. During the **preparation phase**, we use activities that increase the awareness and comprehension of scientific knowledge by our stakeholders, recognizing that this process may require additional and targeted efforts to avoid confusion and prevent stalling of our efforts. Once individuals shift from perceiving scientific knowledge as something more or less abstract to something that has personal relevance to how they manage fire-adapted ecosystems, they have moved into the **acceptance phase**. In most instances, activities such as additional learning (e.g., webinars, research briefs), investigating (e.g., using a knowledge bank of peer-reviewed literature), and participation in organized activities (e.g., workshops) help individuals see how new in- formation can affect their work personally. At some point, individuals will decide to either support or oppose using the new scientific knowledge to which they have been exposed. If individuals conclude there is a benefit, this leads to a positive perception and the possibility of applying this new knowledge to on-the-ground management or planning. Once individuals pass over this action threshold and decide to use the new knowledge, they enter the **commitment phase,** and if these experiences using the new knowledge are positive, this new knowledge will likely be adopted. A major long-term outcome of these activities is that this new knowledge will be considered a 'standard operating procedure,' leading the knowledge to be institutionalized and internalized (i.e., individuals demonstrate a conviction to use and integrate the new knowledge).

Over the activity period of this project, we applied this framework and focused our efforts the three impact areas identified by the Lake States Fire Science Consortium Advisory Committee and our stakeholders.

These impact areas included:

1) **Barriers to implementing the best available fire science** (e.g., lack of the best available fire science, restoration of fire-dependent ecosystems, examine the role of fire science in fire management and natural resource in post-secondary curricula);
2) **Fire and invasive species** (e.g., effects on invasive species, effects of invasive species on fire behavior/fuel loads, spread of invasive species through fire equipment); and,
3) **Fire effects on wildlife** (e.g., identifying fire-dependent wildlife species for the region; increasing awareness of the extent of fire-dependent wildlife in the region, especially those associated with fire-dependent forests).

In addition to these three impact areas, we remained flexible to address other important issues identified by our stakeholders. We designed most of our activities associated with these impact areas with respect to the LSFSC general logic model (Fig. 1) so as to increase the different stages of knowledge (e.g., awareness, comprehension, conviction, and commitment) of our stakeholders to using the best available fire science to manage fire-dependent ecosystems of the Lake States region of the U.S. and Canada.

Accomplishments

We accomplished the majority of the activities we outlined in our annual plans of work, although several of our events needed to be adjusted, cancelled or postponed. Most of these changes were related to budget-related issues at the state and federal level that impacted attendance by those groups of stakeholders. We also constantly experience and recognize the length of lead time it takes to continue quality events and activities, in all levels of our communication efforts. Over the activity period we have reiterated the *constant and recurring need* to focus on specific awareness and comprehension activities as some members retire or move, and new members join the LSFSC, as well as when new information becomes available, or we focus on providing information on new areas identified by our stakeholders. We have also found that "repeating the message" is critical to move from awareness and comprehension of the issues to actual integration of this knowledge into fire and natural resource management. This "repeating the message" we recognize is key to building the cultural acceptance of fire science information (or gaps in knowledge) and has allowed us to help shift, and see the shift, from accomplishing short-term outcomes and moving into our medium- and long-term outcomes.

Some specific highlights of the activity period related to the three impact areas (specific deliverables can be accessed at http://www.lakestatesfiresci.net):

- As of September 2017, we have over 550 members as part of the LSFSC.
- Developed and maintained an effective website for the LSFSC.
- Translated peer-reviewed literature to short research briefs (total of 25) for use by practitioners and stakeholders across the region.
- Shared new science or synthesis of existing science through a variety of electronic and video communications (35 webinars, 30 monthly newsletters, 1000s of Twitter posts).
- Maintained and enhanced a fire science knowledge bank available on the LSFSC website.
- Completed synthesis and knowledge gap analysis of science related to fire effects on wildlife in the Lake States.

- Supported 15 internships designed to enhance manager-scientist interaction.
- Delivered three annual fire workshops in MI, MN, WI (*Burning Issues* [MI], *WI Fire Workshop*, and *Fire in MN Ecosystems Workshop*).
- Organized and supported a periodic *Fire and Fuels Monitoring Workshop*.
- Assisted with the delivery of JFSP Smoke Science Program and delivered a periodic *Smoke TOOLS Workshop*.
- Delivered at least one yearly field trip that usually had 50 to 70+ attendees.
- Actively participated on MI Prescribed Fire Council.
- Helped to establish a new Prescribed Fire Council in Minnesota. One of the first actions this Council is focusing on is helping to establish the "*Certified Minnesota Prescribed Burn Manager* Program, and Training," which provides a crosswalk to a recognized standard and level to fire qualifications and training in Minnesota, particularly bringing into the fold organizations and private companies that have not been previously included with the fire standard recognized by MN DNR and the interagency cooperation in MN.
- Supported several University Courses (for Academic Credit) in fire: *Grand Valley State University* with 3 different annual fire courses (S-130/190, S-290, RX-310); *Michigan State University* with one annual fire course (S- 130/190; University of Wisconsin-Stevens Point with 1-2 annual fire courses that LSFSC helps with; and helping with planning for Lake Superior State University's S-130/190.
- Provided expertise and support for leadership meetings and future agency workshops on seasonality of fire/ growing sea- son burns with USDA Forest Service on two Forests, and with the State DNR's of WI and MN.
- Sponsored and supported numerous partners in the development and delivery of multiple conferences each year (e.g., *Stewardship Network*) to ensure that fire science and management information was highlighted.
- Assisted stakeholders with site visits and prescribed burning planning as needed.

Although the LSFSC is continuing under a new agreement between JFSP, Bureau of Land Management, and The Ohio State University (led by Dr. Eric Toman), this specific project or agreement that funded the LSFSC during the activity period is complete.

References

Conner, D.R. 2006. Managing at the Speed of Change. 2nd Edition. Random House, New York. 289p.

Rogers, E.M. 1962. Diffusion of Innovations. Free Press, New York.

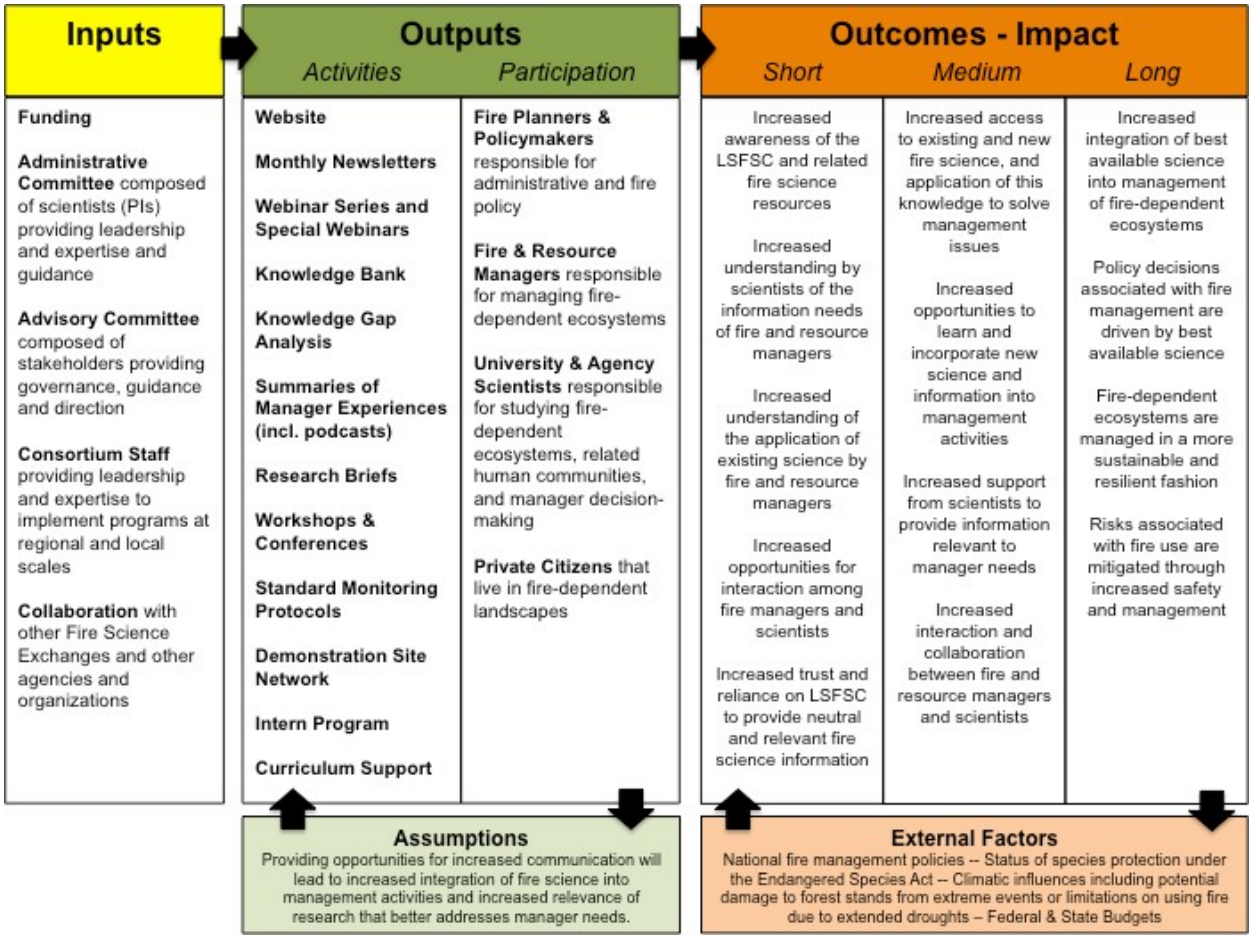

Fig. 1. General logic model guiding activities for the Lake States Fire Science Consortium.